California Environmental Protection Agency
Department of Toxic Substances Control

Draft Environmental Impact Report

Tourtelot Remediation
Benicia, California

State Clearinghouse
Number 99042079

September 2001

DRAFT
ENVIRONMENTAL IMPACT REPORT

Tourtelot Remediation/Cleanup Project
Benicia, California

State Clearinghouse Number: 99042079

Lead Agency:

California Environmental Protection Agency

Department of Toxic Substances Control

Sacramento, California

SEPTEMBER 2001

EXECUTIVE SUMMARY

This section presents a summary of the following items:

- An introduction to this environmental impact report (EIR)
- The background of existing conditions at the Tourtelot Property and portions of some adjoining properties (referred to as the Project Site)
- Impacts and mitigation measures for the proposed project
- Description of alternatives, and comparison of impacts of the alternatives to impacts of the proposed project
- Issues to be resolved
- Areas of controversy.

The information presented within this section is required by the California Environmental Quality Act (CEQA) Guidelines Sections 15123 and 15126.

INTRODUCTION

The California Environmental Protection Agency (Cal/EPA), Department of Toxic Substances Control (DTSC), as lead agency, prepared this document in accordance with CEQA; the Public Resources Code (PRC) Sections 21100 et seq., and the State CEQA Guidelines. CEQA requires that public agencies consider the environmental effects that may occur with approval of a proposed project, and avoid or substantially lessen significant impacts on the environment when feasible. When a project could have a significant effect on the environment, the lead agency (i.e., the agency with the principal responsibility for carrying out or approving a project) is required to prepare an EIR.

This document is a draft EIR that will be available for public review from 12 September 2001 to 27 October 2001. During this 45-day review period, written comments and inquiries regarding this document should be directed to:

California Environmental Protection Agency
Department of Toxic Substances Control
Northern California - Office of Military Facilities
8800 Cal Center Drive
Sacramento, CA 95826-3200
Contact: Jim Austreng

The final EIR will be prepared after public review of the draft EIR, receipt of public comments, and preparation of written responses to public comments. During the 45-day public review period, a public hearing will be held, and the public will have an opportunity to provide verbal comments.

This EIR addresses potential environmental impacts resulting from or related to the proposed Tourtelot remediation. The property subject to remediation includes parcels commonly referred to as the Tourtelot Property, as well as portions of some adjoining properties. The remediation involves the characterization, treatment, and removal of detected ordnance and explosives (OE) and contaminated soil at the Project Site. Monitoring will also be conducted for groundwater.

In June 1999, DTSC issued an Imminent and/or Substantial Endangerment Determination and Remedial Action Order (Order). The Order provides the framework for the remediation work.

BACKGROUND

The Project Site lies completely within the City of Benicia, Solano County, California, approximately 30 miles northeast of San Francisco. Consisting of approximately 220 acres, it is partially within the boundaries of the Former Benicia Arsenal.

The U.S. Army leased portions of the Project Site between 1944 and 1960 for munitions, demilitarization, demolition, repair, and artillery testing activities. In 1955 and 1960, the Army's leases for portions of the Project Site ended; in January 1962, the Department of Defense declared the entire Benicia Arsenal excess.

The Project Site remained under private ownership and was not developed. In 1989, the City of Benicia approved an EIR for residential development of portions of the Project Site. The 1989 EIR addressed an amendment to the City of Benicia's General Plan (General Plan) and re-zoning to allow development of portions of the Project Site for residential purposes.

In the early 1990s, developers began grading activities in support of on- and off-site residential development. Citizens began raising concerns about potential OE and soil

contamination due to past Army activities on the property. In mid-1996, during preliminary site preparation associated with development of the Project Site, concrete-filled howitzer shells were unearthed. The property owner/developer, Granite Management Corporation (Granite), ceased the preliminary site preparation activities.

Subsequently, Granite retained OE experts and initiated OE investigations across the Project Site. In fall 1996, NORCAL, Inc., conducted a geophysical survey. Data collected during this survey were used to clear approximately 8.5 acres of the Project Site. A total of six OE items were removed. The OE clearance was then suspended pending further investigation by USACE. In June 1999, DTSC issued the Order under which a series of investigations have been conducted to characterize the Project Site.

In 1999, USACE conducted an engineering evaluation/cost analysis (EE/CA) investigation for the entire Former Benicia Arsenal, including a majority of the Project Site. During this investigation, two anomalies encountered were classified as OE. DTSC oversaw a removal action investigation at the North Valley Military Landfill in May 2000 to facilitate characterization of the soil beneath the landfill. No OE was recovered during this investigation.

The baseline environmental conditions at the Project Site consist mainly of undeveloped open space. The Project Site has rolling topography that includes areas referred to as the "Ridge," which separates the North Valley and the South Valley, both of which have steep terrain. The southernmost portion of the Project Site, known as the Unit D-1 parcel, which is adjacent to Rose Drive, has been graded for residential development but remains open space. Past grading activity on the Project Site is evident in the North Valley and on the Ridge; however, these areas have revegetated naturally. Currently, the Project Site is fenced and access is controlled.

PROPOSED PROJECT

The objectives of the project are as follows:

- Remediate the Project Site in a manner and to standards that would allow DTSC to determine that all appropriate response actions have been completed, and that no further removal/remedial action is necessary for the Project Site under the Order issued by DTSC on June 1, 1999 (Docket No. I/SE 98/99-011).

- Remediate the areas of the Project Site that the Benicia General Plan designates for residential or park use to a standard suitable to allow unrestricted use of residential lots and the park.

- Remediate the other areas of the Project Site to a standard suitable for open space use consistent with the General Plan and Zoning Ordinance.

In order to meet these project objectives, the proposed project will include remediation of all detected OE and identification, characterization, treatment, and removal of soil containing chemical concentrations exceeding final remediation goals. Broadly, site remediation will consist of several coordinated activities:

- Point clearance of all detected OE, OE scrap, and non-OE metallic debris from the entire site

- Areawide clearance in order to ensure clearance of OE from areas considered to have a potential to contain OE that are planned for future residential use in the North Valley and South Valley and on the Ridge, and to provide 14 feet of clean crushed bedrock below final site grades in future residential areas, except where fill overlies clean bedrock

- Excavation, treatment as needed, transportation, and suitable off-site disposal of chemically contaminated soil requiring remediation.

Point Clearance Activities

OE point clearance activities are expected to begin following DTSC certification of the final EIR and approval of the Remedial Action Plan (RAP). In order to prepare the Project Site for surface clearance activities, the area will be cleared of vegetation to a height of 6 inches or less. The majority of the vegetation will be removed by mechanical means (e.g., self-propelled and/or tractor-pulled mowing equipment). Some portions of the South Valley wetlands and steeper slope areas cannot be accessed by mechanical equipment, and will be cleared using hand-held, gas-powered weed cutters. The surface preparation phase also includes removal of internal fencing, disposal of construction debris, and location and marking of survey grids to track the progress of OE point clearance activities. After surface preparation is complete, OE surface clearance will be conducted by systematically searching the ground surface visually and with hand-held geophysical search equipment to clear OE, OE scrap, and non-OE metallic debris on the ground surface.

After the OE surface clearance has been completed, geophysical crews will begin collecting subsurface anomaly data from each grid by mapping the Project Site using a Multisensor Towed Array Detection System (MTADS). Geophysical investigation and mapping activities include:

- Geophysical data collection
- Geophysical data processing
- Preparation of maps and dig sheets
- Reacquisition and marking of anomalies.

OE clearance crews will excavate and identify each anomaly marked by the reacquisition team. Excavation teams will begin excavating anomalies within 1 week after the reacquisition team has begun its work. OE point clearance includes:

- Excavation and identification of geophysical anomalies
- Removal of anomalies
- Disposal of OE, OE scrap, and non-OE metallic debris
- Completion of a Quality Assurance/Quality Control (QA/QC) scanning and investigation of geophysical anomalies over the entire Project Site.

During the surface clearance activities and excavation of subsurface anomalies and other invasive OE clearance activities, a Minimum Separation Distance (MSD), beyond which the public and nonessential personnel withdraw for safety purposes, will be enforced. The MSD is based on an accidental detonation of the most probable munition (MPM) expected to be encountered at the site. When the MSD encompasses adjacent homes or businesses, a Minimum Separation Area (MSA) will be designated. Residences and businesses within the MSA will need to be vacant during OE excavation activities; however, building occupants will be able to return to their homes/businesses at the end of each work day. A Hospitality Center will be established to accommodate displaced residents and employees of local businesses while the MSA is in effect.

Soil Remediation Activities

Remediation of contaminated soils is scheduled to occur after point clearance and QA/QC activities are complete on an area-by-area basis. Affected soils include those from the Trinitrotoluene (TNT) Strips, the Flare Site, Demolition Site #3, and stockpiles situated in the North Valley.

The locations of soils and estimated maximum quantities that will require disposal are as follows:

- TNT Strips - 25,000 cubic yards (cy) of soils with levels of explosives exceeding the preliminary remediation goals established by the risk evaluation

- Flare Site - 1,500 cy of soils containing elevated levels of lead or other priority pollutant metals and possibly dioxins

- Demolition Site #3 - 9,500 cy of soil containing elevated levels of mercury

- Stockpiles #1, #2, and #3 - 8,000 cy of material containing elevated levels of polyaromatic hydrocarbons (PAHs) and oil

- Ridge Stockpiled Soils - up to 37,400 cy of soil may be transported off site, if necessary.

Grading Activities

Extensive grading (cutting and filling) will be conducted on the Project Site to complete the project. Grading may be associated with (1) excavation of previously placed fills, soil stockpiles, and areas having high anomaly concentrations (point clearance grading); (2) areawide clearance (areawide clearance grading); or (3) grading in an area that does not meet the criteria for areawide clearance.

Point clearance grading will be conducted in some areas of Unit D-1 containing engineered fill from earlier grading activities. Because this fill may have come from areas on the Project Site containing OE, it may potentially contain OE. The fill will be removed in lifts. Following removal of each lift, the area will be geophysically scanned for anomalies, and any anomalies found will be investigated using point clearance procedures. Similar point clearance grading activities will also be conducted on the soil stockpiles on the Ridge and in Unit D-1, the fill area in the bottom of the North Valley, and the Demolition and Flare sites.

Areawide clearance will be conducted in areas of the Project Site that are within (1) a future residential area; (2) an area that formerly contained OE or is considered to have a potential to contain OE; or (3) a 200-foot radius of an OE item that is in an area not otherwise considered to have a potential to contain OE. Areawide clearance soils will be scanned in lifts before they are excavated, and will be placed in the North Valley and scanned again in lifts. Any anomalies detected will be removed through point clearance.

Upon completion of OE point clearance and QA/QC activities throughout the Project Site, an evaluation of the distribution of OE and OE scrap will be performed to assess the potential for soils in future residential areas to contain OE. Conventional grading techniques will be used in future residential areas that are identified by DTSC as not considered to have the potential to contain OE, and that require grading to create the 14 feet of crushed bedrock below final grade. No scanning is anticipated in these

areas. The Ridge will be cut to provide clean crushed bedrock known to be free of OE. This fill will be placed in lifts, creating a layer at least 14 feet thick over the soil excavated as part of the point and areawide clearance grading. All on-site materials intended for use as clean crushed bedrock fill will be free of OE and have concentrations of chemicals that do not exceed final remediation goals. Verification that only OE free material was used will be provided in the Implementation Report.

Once grading activities are complete in all areas planned for residential use, all exposed surface material to a depth of at least 14 feet will be comprised of bedrock or crushed bedrock known to be free of OE. In the South Valley at locations that are planned to remain open space, all detected anomalies will have been removed; however, the soil overlying bedrock will remain otherwise undisturbed except in the Demolition and Flare sites. In the Demolition Sites, the soil will have been removed to bedrock and backfilled with OE-free crushed bedrock or with soil from the excavation that is not impacted with OE or chemicals. The Flare Site will have been excavated until any remaining chemical concentrations in the soil do not exceed preliminary remediation goals. In the open space areas of the North Valley and South Valley, the paved portion of Unit D-1, and the McAllister Drive Land Bridge not subjected to areawide OE clearance, institutional controls will be applied through a Covenant to Restrict Use of Property.

SUMMARY OF IMPACTS AND MITIGATION MEASURES

Table ES-1 (at the end of this section) provides a complete summary of the impacts and mitigation measures for the proposed project. A list of significant and unavoidable impacts is provided below.

Aesthetics

- Impact 4-5. Short-term Visual Impacts on Observation Point 3
- Impact 4-6. Long-term Visual Impacts on Observation Point 3
- Impact 4-7. Short-term Visual Impacts on Observation Point 4
- Impact 4-8. Long-term Visual Impacts on Observation Point 4
- Impact 4-9. Long-term Impacts on Scenic Resources from Areawide Clearance
- Impact 4-10. Short-term Impacts on Existing Visual Character from Vegetation Clearance

- Impact 4-11. Short-term Impacts on Existing Visual Character from Areawide Clearance

- Impact 4-12. Long-term Impacts on Existing Visual Character from Areawide Clearance.

Hazards and Hazardous Materials

- Impact 10-2. Short-term Hazards to On-site Workers and Private Property from Accidental Detonations.

Land Use/Planning

- Impact 12-2. Short-term Incompatibility with Adjacent Land Uses.

Noise

- Impact 14-1. Short-term Noise Impact from Accidental or BIP Detonations during OE Removal and Areawide Clearance Activities

- Impact 14-2. Short-term Vibration Impact from Accidental or BIP Detonations during OE Removal and Areawide Clearance Activities

- Impact 14-3. Short-term Noise Impact from Mechanical Equipment Used in Surface Preparation, OE Clearance, Soil Excavation, and Grading Activities.

Population/Housing

- Impact 15-1. Long-term Increase in Population Growth from Site Remediation

- Impact 15-3. Short-term Inconvenience to Residents from Temporary Withdrawal.

Cumulative Impacts

- Impact 21-1. Long-term Impacts on Existing Visual Character from Development

- Impact 21-13. Short-term Increased Noise Levels

- Impact 21-14. Long-term Increase in Population Growth

- Impact 21-21. Potential to Induce Growth.

ALTERNATIVES TO THE PROPOSED PROJECT

Under the State CEQA Guidelines, an EIR must analyze potential alternatives other than the one presented as the proposed project.

As part of the feasibility study (FS) for the project, eight preliminary alternatives were developed for the remediation of the Project Site. Although the RI/FS included subalternative B (on-site composting of TNT), for Alternatives 4 through 8, subalternative B was rejected by DTSC from further consideration and, therefore, was not evaluated in the EIR. Each of the preliminary alternatives was assessed for its (1) effectiveness, (2) implementability, and (3) cost. This process identified five alternatives to be analyzed in further detail, including the proposed project. The eight alternatives are presented below.

Alternative 1: No-Project/No Maintenance.

No remediation activities would occur on the Project Site. Institutional controls currently in place would not be maintained.

Alternative 2: No-Project/Institutional Controls.

This alternative is the same as Alternative 1, except institutional controls would be maintained.

Alternative 3: OE Point Clearance, Institutional Controls, and Monitoring.

Alternative 3 would involve OE point clearance and institutional controls over the entire Project Site.

Alternative 4: OE Point Clearance and Soil Remediation without Grading.

Alternative 4 is the same as the proposed project, except that no areawide clearance would be conducted.

Alternative 5: Remediation without Excavation of OE Kick-out Zone.

Alternative 5 is the proposed project.

Alternative 6: Remediation with Excavation of OE Kick-out Zone and Placement of OE Kick-out Zone Soils in the North Valley.

Alternative 6 would include the same activities as the proposed project, except that areawide clearance would also occur in the South Valley OE kick-out zone, excluding the South Valley wetlands. This area would be excavated to bedrock and OE kick-out zone soils would be placed in the North Valley.

Alternative 7: Remediation with Excavation of OE Kick-out Zone, Placement of Fill in the North Valley, and Removal/Reconstruction of the South Valley Wetland.

Alternative 7 would include the same activities as the proposed project, except that areawide clearance would also occur in the South Valley OE kick-out zone, including the South Valley wetlands. The wetlands would be reconstructed in place upon completion of the excavation.

Alternative 8: Remediation with Excavation of OE Kick-out Zone and Placement of Fill in South Valley.

Alternative 8 would include the same activities as the proposed project, except that areawide clearance would also occur in the South Valley OE kick-out zone, excluding the South Valley wetlands. Soils excavated from the South Valley OE kick-out zone would be replaced in the South Valley. These soils would be geophysically scanned for anomalies during replacement.

Analysis of Alternatives

Alternatives 1, 2, 6, and 8 have been retained for further analysis. This analysis is based on an evaluation of the key differences between each alternative and the proposed project. Impacts from each of the four alternatives have been compared to impacts resulting from the proposed project. A comparison of impacts for the proposed project and the alternatives is provided in Table ES-2 (at the end of this section).

Environmentally Superior Alternative

Alternative 2 was identified as the environmentally superior alternative because it would result in the least impact to the environment in most resource areas, except hazards and hazardous materials. However, because Alternative 2 is one of the “No-Project” alternatives, the proposed project and Alternative 6 have been selected as the second environmentally superior alternatives, in accordance with Section 15126.6(e)(2) of the State CEQA Guidelines. They have both been chosen as equally environmentally

superior because they both achieve project objectives and would both be acceptable for remediation of the Project Site. The proposed project has been chosen as environmentally superior because it reduces the risk to human health from hazards and hazardous materials, while also reducing environmental impacts of the proposed project in several resource areas. Alternative 6 has been chosen because it provides superior protection from hazards and hazardous materials.

ISSUES TO BE RESOLVED

Issues to be resolved by DTSC prior to certification of the final EIR include:

- Will it be necessary to obtain a streambed alteration permit from the California Department of Fish and Game (DFG) for activities in the South Valley wetland?

AREAS OF CONTROVERSY

Areas of controversy regarding remediation of the Project Site include:

- What is an appropriate level of clean up for the site?
- Can an acceptable level of cleanup be accomplished without substantially affecting the site's topography?
- Will the site be remediated to an extent that would allow housing to be built on the site?
- What is an appropriate MSD?
- Should the Matthew Turner Elementary School be evacuated during OE removal activities?

Table ES-1. Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (Page 1 of 26)

Impact	Impact Level	Mitigation Measure	Impact Level after Mitigation
Aesthetics			
4-1. Short- and Long-term Visual Impacts on General Plan Vistas	LTS	None Required	LTS
4-2. Short-term Visual Impacts On Observation Point 1	LTS	None Required	LTS
4-3. Long-term Visual Impacts on Observation Point 1	LTS	None Required	LTS
4-4. Short- and Long-term Visual Impacts on Observation Point 2	LTS	None Required	LTS
4-5. Short-term Visual Impacts on Observation Point 3	SU	None Available	SU
4-6. Long-term Visual Impacts on Observation Point 3	SU	7-5: Revegetation of Grassland Habitat 7-7: Restore Marsh and Riparian Vegetation	SU
4-7. Short-term Visual Impacts on Observation Point 4	SU	None Available	SU

Table ES-1. Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (Page 2 of 26)

Impact	Impact Level	Mitigation Measure	Impact Level after Mitigation
4-8. Long-term Visual Impacts on Observation Point 4	SU	7-5: Revegetation of Grassland Habitat 7-7: Restore Marsh and Riparian Vegetation	SU
4-9. Long-term Impacts on Scenic Resources from Areawide Clearance	SU	None Available	SU
4-10. Short-term Impacts on Existing Visual Character from Vegetation Clearance	SU	None Available	SU
4-11. Short-term Impacts on Existing Visual Character from Areawide Clearance	SU	None Available	SU
4-12. Long-term Impacts on Existing Visual Character from Areawide Clearance	SU	7-5: Revegetation of Grassland Habitat 7-7: Restore Marsh and Riparian Vegetation	SU
4-13. Short-term Impacts from Light and Glare for Construction Equipment Maintenance	S	4-1: Limit Maintenance to as Early in Evening as Possible, and to a Location Not Readily Visible to Adjacent Residences	LTS

Table ES-1. Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (Page 3 of 26)

Impact	Impact Level	Mitigation Measure	Impact Level after Mitigation
Agriculture Resources			
5-1. Long-term Impacts from Conversion of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance or Conflicts with Existing Zoning for Agricultural Use	LTS	None Required	LTS
Air Quality			
6-1. Short-term Increased Exhaust and Fugitive Emissions from Mobilization and Demobilization; Equipment Operation for Surface Preparation, Clearance and OE Excavation; Construction Equipment Operation and Associated Activities from Haul Road Construction; Removal and Transport of Contaminated Soils; and Equipment Operation and Ground Disturbance from Grading Activities	S	6-1: Implementation of PM_{10} Fugitive Dust Emission Control Measures Recommended by the BAAQMD 6-2: Implementation of Measures to Minimize Exhaust Emissions from Construction Equipment	LTS
6-2. Short-term Localized Hazardous Air Pollutants (HAPs) and Criteria Pollutants Emissions from Detonation Activities in a Blast Chamber	LTS	None Required	LTS

Table ES-1. Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (Page 4 of 26)

Impact	Impact Level	Mitigation Measure	Impact Level after Mitigation
6-3. Short-term Localized HAPs and Criteria Pollutants Emissions from BIP or Accidental Detonations	LTS	6-3: Restrictions of Weather Conditions on BIP	LTS
6-4. Short-term Increased VOC Emissions from Removal and Transport of Contaminated Soils	LTS	None Required	LTS
Biological Resources			
7-1. Short-term Loss of Annual Grassland Vegetation from Vegetation Clearance, Hand-excavation of Anomalies, and BIP Activities	LTS	None Required	LTS
7-2. Short-term Loss of Foraging Habitat for the Adult Callipe Silverspot Butterfly from Vegetation Clearance, Hand-excavation of Anomalies, and BIP Activities	LTS	None Required	LTS
7-3. Short-term Loss of Foraging Habitat for Special-status Bird Species from Vegetation Clearance, Hand-excavation of Anomalies, and BIP Activities	LTS	None Required	LTS

Table ES-1. Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (Page 5 of 26)

Impact	Impact Level	Mitigation Measure	Impact Level after Mitigation
7-4. Short-term Loss of Nesting Habitat and Disturbance to Special-status Breeding Bird Species from Vegetation Clearance, Hand-excavation of Anomalies, and BIP Activities	LTS	None Required	LTS
7-5. Short-term Loss of Common Grassland Wildlife from Vegetation Clearance, Hand-excavation of Anomalies, and BIP Activities	LTS	None Required	LTS
7-6. Short-term Loss of Marsh and Riparian Habitat from Vegetation Clearance, Hand-excavation of Anomalies, and BIP Activities	S	7-1: Implement Erosion and Sediment Control Measures 7-2: Protection of Water Quality and Aquatic Habitat 7-3: On-site Biological Monitoring	LTS

Table ES-1. Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (Page 6 of 26)

Impact	Impact Level	Mitigation Measure	Impact Level after Mitigation
7-7. Short-term Loss of Nesting Habitat and Disturbance to the Breeding Tricolored Blackbird, Saltmarsh Common Yellowthroat, and Northern Harrier from Vegetation Clearance, Hand-excavation of Anomalies, and BIP Activities	LTS	7.4: Pre-construction Marsh Bird Survey	LTS
7-8. Short-term Loss of Habitat to the Northwestern Pond Turtle, California Red-legged Frog, California Tiger Salamander, and California Newt from Vegetation Clearance, Hand-excavation of Anomalies, and BIP Activities	LTS	None Required	LTS
7-9. Short-term Impacts to the Aquatic Biota of the Wetlands in the South Valley from Vegetation Clearance, Hand-excavation of Anomalies, and BIP Activities	LTS	7-1: Implement Erosion and Sediment Control Measures	LTS

Table ES-1. Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (Page 7 of 26)

Impact	Impact Level	Mitigation Measure	Impact Level after Mitigation
7-10. Long-term Loss of Nonnative Annual Grassland Vegetation from Excavation of OE and Contaminated Soil and Grading Activities	S	7-5: Revegetation of Grassland Habitat	LTS
7-11. Long-term Loss of Foraging Habitat for the Adult Callipe Silverspot Butterfly from Excavation of OE and Contaminated Soil and Grading Activities	LTS	None Required	LTS
7-12. Long-term Loss of Grassland Foraging Habitat for Special-status Bird Species from Excavation of OE and Contaminated Soil and Grading Activities	S	7-5: Revegetation of Grassland Habitat	LTS
7-13. Long-term Loss of Nesting Habitat and Disturbance to Special-status Breeding Bird Species from Excavation of OE and Contaminated Soil and Grading Activities	S	7-3: On-site Biological Monitoring 7-5: Revegetation of Grassland Habitat 7-6: Preconstruction Survey for Grassland Avian Species	LTS

Table ES-1. Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (Page 8 of 26)

Impact	Impact Level	Mitigation Measure	Impact Level after Mitigation
7-14. Long-term Loss of Common Grassland Wildlife from Excavation of OE and Contaminated Soil and Grading Activities	LTS	None Required	LTS
7-15. Long-term Disturbance of Marsh and Riparian Habitat from Excavation of OE and Contaminated Soil	S	7-1: Implement Erosion and Sediment Control Measures 7-2: Protection of Water Quality and Aquatic Habitat 7-3: On-site Biological Monitoring 7-7: Restore Marsh and Riparian Vegetation	LTS
7-16. Long-term Loss of Nesting Habitat and Disturbance to the Breeding Tricolored Blackbird, Saltmarsh Common Yellowthroat, and Northern Harrier from Excavation of OE and Contaminated Soil	LTS	7-4: Pre-construction Marsh Bird Survey 7-7: Restore Marsh and Riparian Vegetation	LTS

Table ES-1. Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (Page 9 of 26)

Impact	Impact Level	Mitigation Measure	Impact Level after Mitigation
7-17. Long-term Impacts to the Aquatic Biota of the Wetland in the South Valley from Excavation of OE and Contaminated Soil	S	7-1: Implement Erosion and Sediment Control Measures 7-2: Protection of Water Quality and Aquatic Habitat 7-3: On-site Biological Monitoring 7-7: Restore Marsh and Riparian Vegetation	LTS
7-18. Long-term Loss of Jurisdictional Wetlands from Filling Activities	S	7-8: Implement Wetland Permit Requirements	LTS

Table ES-1. Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (Page 10 of 26)

Impact	Impact Level	Mitigation Measure	Impact Level after Mitigation
7-19. Long-term Loss of Habitat to Northwestern Pond Turtle, California Tiger Salamander, and California Newt from Excavation of OE and Contaminated Soil	S	7-1: Implement Erosion and Sediment Control Measures 7-2: Protection of Water Quality and Aquatic Habitat 7-3: On-site Biological Monitoring 7-7: Restore Marsh and Riparian Vegetation	LTS
Cultural Resources			
8-1. Long-term Impacts to Cultural or Paleontological Resources Discovered during Excavation Activities	LTS	8-1: Cease Work and Consult the SHPO	LTS

Table ES-1. Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (Page 11 of 26)

Impact	Impact Level	Mitigation Measure	Impact Level after Mitigation
Geology and Soils			
9-1. Short-term Increase in Soil Erosion and Sedimentation from Vegetation Removal, Excavation, Grading, and Various OE Removal/Treatment Activities	S	6-1: Implementation of PM_{10} Fugitive Dust Emission Control Measures Recommended by the BAAQMD 7-1: Implement Erosion and Sediment Control Measures 7-5: Revegetation of Grassland Habitat 7-7: Restore Marsh and Riparian Vegetation 9-1: Obtain NPDES Permit and Implement Permit Requirements	LTS

Table ES-1. Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (Page 12 of 26)

Impact	Impact Level	Mitigation Measure	Impact Level after Mitigation
9-2. Long-term Instability in Geologic Units from Removing Overburden during Cut-and-Fill Activities	LTS	None Required	LTS
9-3. Long-term Soil Expansion in Susceptible Clays from Cut-and-Fill Activities	LTS	None Required	LTS
9-4. Long-term Exacerbation of Impacts from Fault Rupture Due to Cut-and-Fill Activities	LTS	None Required	LTS
9-5. Long-term Exacerbation of Impacts from Ground Acceleration and Ground Shaking from Filling and Grading Activities	LTS	None Required	LTS
9-6. Long-term Exacerbation of Impacts from Liquefaction Due to Earthquakes from Cut-and-Fill Activities	LTS	None Required	LTS
9-7. Short-term Instability and Increase in Potential for Landslides from Excavation, Grading, and BIP	S	9-2: Implement Engineering Controls During Grading Activities	LTS

Table ES-1. Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (Page 13 of 26)

Impact	Impact Level	Mitigation Measure	Impact Level after Mitigation
9-8. Long-term Loss of Topsoil from Grading Activities	S	9-3: Reestablish Topsoil through Revegetation of the Site	LTS
Hazards and Hazardous Materials			
10-1. Short-term Hazards to the Public from Accidental Detonations	LTS	10-1: Implement a Voluntary Separation Distance (VSD) based on Maximum Fragmentation Distances	LTS
10-2. Short-term Hazards to On-site Workers and Private Property from Accidental Detonations	SU	10-2: Repair or Replace Property Damaged by Detonation	SU
10-3. Short-term Hazards to On-site Workers, the Public, and Property from OE Detonations Using Engineering Controls	LTS	None Required	LTS
10-4. Short-term Hazards to On-site Workers, the Public, and Property from Wildfires Due to Project Activities	LTS	None Required	LTS

Table ES-1. Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (Page 14 of 26)

Impact	Impact Level	Mitigation Measure	Impact Level after Mitigation
10-5. Short-term Hazards to On-site Workers or the Public from Exposure to Contaminated Soil during Transport and Disposal	LTS	None Required	LTS
10-6. Short-term Hazards to On-site Workers or the Public from the Release of Soil Contaminants	LTS	None Required	LTS
10-7. Short-term Hazards to the Public from the Presence of OE	LTS	None Required	LTS
10-8. Long-term Hazards to the Public from the Release of Soil Contaminants	LTS	None Required	LTS
10-9. Long-term Hazards to the Public from the Presence of OE	LTS	None Required	LTS
10-10. Long-term Hazards to the Public from Contact with Groundwater and Surface Water	LTS	None Required	LTS

Table ES-1. Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (Page 15 of 26)

Impact	Impact Level	Mitigation Measure	Impact Level after Mitigation
Hydrology/Water Quality			
11-1. Long- and Short-term Increase in Storm Water Runoff from Vegetation Clearance and Soil Removal	S	6-1: Implementation of PM_{10} Fugitive Dust Emission Control Measures Recommended by the BAAQMD 7-1: Implement Erosion and Sediment Control Measures 7-5: Revegation of Grassland Habitat 7-7: Restore Marsh and Riparian Vegetation	LTS
11-2. Short-term Increased Potential for Flooding from Increased Storm Water Runoff due to Vegetation Clearance and Soil Removal	LTS	None Required	LTS

Table ES-1. Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (Page 16 of 26)

Impact	Impact Level	Mitigation Measure	Impact Level after Mitigation
11-3. Short-term Degradation of Water Quality from Sedimentation from Excavation of OE and Contaminated Soil, and Grading	S	6-1: Implementation of PM_{10} Fugitive Dust Emission Control Measures Recommended by the BAAQMD 7-1: Implement Erosion and Sediment Control Measures 7-5: Revegetation of Grassland Habitat 7-7: Restore Marsh and Riparian Vegetation	LTS

Table ES-1. Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (Page 17 of 26)

Impact	Impact Level	Mitigation Measure	Impact Level after Mitigation
11-4. Short-term Increase in Polluted Runoff from Increased Storm Water Runoff Due to Vegetation Clearance and Soil Removal	S	6-1: Implementation of PM_{10} Fugitive Dust Emission Control Measures Recommended by the BAAQMD 7-1: Implement Erosion and Sediment Control Measures 7-5: Revegetation of Grassland Habitat 7-7: Restore Marsh and Riparian Vegetation	LTS
11-5. Decreased Availability of Local Groundwater Resources	LTS	None Required	LTS
11-6. Long-term Degradation of Water Quality following Excavation and Removal of Contaminated Soils and Sediment	LTS	None Required	LTS

Table ES-1. Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (Page 18 of 26)

Impact	Impact Level	Mitigation Measure	Impact Level after Mitigation
Land Use/Planning			
12-1. Consistency with Relevant Land Use Policies	LTS	None Required	LTS
12-2. Short-term Incompatibility with Adjacent Land Uses	SU	10-2: Repair or Replace Property Damaged by Detonation 17-1: Coordinate with City of Benicia Parks Department Regarding Enforcement of the MSD of City Parkland	SU
12-3. Compatibility with Planned Land Uses	LTS	None Required	LTS
12-4. Conversion of Existing or Designated Land Uses	LTS	None Required	LTS

Table ES-1. Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (Page 19 of 26)

Impact	Impact Level	Mitigation Measure	Impact Level after Mitigation
Mineral Resources			
13-1. Long-term Loss of Availability of a Known Mineral Resource of Local or Regional Value	LTS	None Required	LTS
Noise			
14-1. Short-term Noise Impact from Accidental or BIP Detonations during OE Removal and Areawide Clearance Activities	SU	10-2: Repair or Replace Property Damaged by Detonation	SU
14-2. Short-term Vibration Impact from Accidental or BIP Detonations during OE Removal and Areawide Clearance Activities	SU	10-2: Repair or Replace Property Damaged by Detonation	SU
14-3. Short-term Noise Impact from Mechanical Equipment Used in Surface Preparation, OE Clearance, Soil Excavation, and Grading Activities	SU	14-1: Minimize Use of Heavy Equipment	SU
14-4. Short-term Impact from Construction Traffic Noise along Rose Drive	S	14-2: Use Alternate Transportation Route	LTS

Table ES-1. Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (Page 20 of 26)

Impact	Impact Level	Mitigation Measure	Impact Level after Mitigation
14-5: Short-term Impacts from Construction Traffic Noise to Future Residents along McAllister Drive in Unit D-1	S	14-2: Use Alternate Transportation Route 14-3: Delay Occupancy of Houses along McAllister Drive in Unit D-1	LTS
Population/Housing			
15-1. Long-term Increase in Population Growth from Site Remediation	SU	None Available	SU
15-2. Long-term Increase in Population and Housing Demand from Project Construction Activities	LTS	None Required	LTS
15-3. Short-term Inconvenience to Residents from Temporary Withdrawal	SU	None Available	SU

Table ES-1. Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (Page 21 of 26)

Impact	Impact Level	Mitigation Measure	Impact Level after Mitigation
Public Services			
16-1. Short-term Increased Demand for Police Support to Enforce MSD	LTS	None Required	LTS
16-2. Short-term Increased Demand for Police and Fire Support in Event of Accident	LTS	None Required	LTS
16-3. Short-term Increased Demand for Emergency Medical Support in Event of Accident	LTS	None Required	LTS
Recreation			
17-1. Temporary Restriction on Use of Portions of Adjacent Recreational Facilities during Enforcement of the MSD	LTS	17-1: Coordinate with City of Benicia Parks Department Regarding Enforcement of the MSD on City Parkland	LTS

Table ES-1. Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (Page 22 of 26)

Impact	Impact Level	Mitigation Measure	Impact Level after Mitigation
Transportation/Traffic			
18-1. Short-term Increase in Traffic from Project Activities	LTS	None Required	LTS
18-2. Short-term Decrease to Level of Service Standards from Project-related Traffic	LTS	None Required	LTS
18-3. Short-term Incompatible Use of Streets by Construction Traffic	S	14-2: Use Alternate Transportation Route	LTS[(a)]
	S	18-1: Applicant to Maintain Residential Streets	SU[(a)]
Utilities/Service Systems			
19-1. Short-term Increase in Water Use during Excavation and Grading Activities	LTS	19-1: Reduce Water Consumption from Local Water Supply or Provide Compensation for Water Usage Above Voluntary Cutback Levels	LTS
19-2. Short-term Disruption of Electrical Service in the Event a Planned Detonation Affects the High-voltage Line	LTS	None Required	LTS

Table ES-1. Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (Page 23 of 26)

Impact	Impact Level	Mitigation Measure	Impact Level after Mitigation
19-3. Short-term Increase in Solid Waste Disposal during Surface Preparation and Soil Remediation Activities	LTS	None Required	LTS
Cumulative Impacts			
21-1. Long-term Impacts on Existing Visual Character from Development	SU	None Available	SU
21-2. Short-term Increased Exhaust and Fugitive Emissions from Construction Activities	S	21-1: Require Developers to Implement Fugitive Dust Emissions Control Measures Recommended by the BAAQMD	LTS
21-3. Potential Loss of Habitat for and Mortality of Sensitive Species from Ground-disturbing Activities	S	21-2: Require Developers to Implement Site-specific Mitigation Measures Developed during the Environmental Review Process	LTS

Table ES-1. Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (Page 24 of 26)

Impact	Impact Level	Mitigation Measure	Impact Level after Mitigation
21-4. Potential Loss of Annual Grassland and Related Common Species	S	21-3: Require Developers to Contribute to an Environmental Conservation Fund	LTS
		21-4: Require Developers to Incorporate Greenbelt Areas into Development Plans	
21-5. Potential Loss of Marsh and Riparian Habitat and Related Common Species	S	21-3: Require Developers to Contribute to an Environmental Conservation Fund	LTS
21-6. Potential Loss of Jurisdictional Wetlands	S	21-2: Require Developers to Implement Site-specific Mitigation Measures Developed during the Environmental Review Process	LTS
21-7. Potential Loss or Degradation of Cultural Resources from Ground-disturbing Activities	S	21-2: Require Developers to Implement Site-specific Mitigation Measures Developed During the Environmental Review Process	LTS
21-8. Potential Loss of Topsoil and Increased Soil Erosion from Ground-disturbing Activities	S	21-5: Require the Use of Generally Accepted Erosion Control Practices	LTS

Table ES-1. Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (Page 25 of 26)

Impact	Impact Level	Mitigation Measure	Impact Level after Mitigation
21-9. Short-term Increased Risk to Human Health from Exposure to OE	LTS	None Required	LTS
21-10. Short-term Increased Risk to Human Health from Exposure to Contaminated Soil	LTS	None Required	LTS
21-11. Short-term Degradation of Water Quality from Soil Erosion during Ground-disturbing Activities	S	21-5: Require the Use of Generally Accepted Erosion Control Practices	LTS
21-12. Short-term Incompatibility with Adjacent Land Uses	LTS	None Required	LTS
21-13. Short-term Increased Noise Levels	SU	None Available	SU
21-14. Long-term Increase in Population Growth	SU	None Available	SU
21-15. Short-term Increased Demand for Police Department Services	LTS	None Required	LTS
21-16. Short-term Increased Demand for Fire Department and Emergency Medical Services	LTS	None Required	LTS
21-17. Short-term Increased Traffic on Rose Drive and East Second Street	LTS	None Required	LTS

Table ES-1. Summary of Environmental Impacts and Mitigation Measures for the Proposed Project (Page 26 of 26)

Impact	Impact Level	Mitigation Measure	Impact Level after Mitigation
21-18. Short-term Incompatible Use of Rose Drive and McAllister Drive by Construction Equipment	LTS	None Required	LTS
21-19. Short-term Increased Demand on the Available Water Supply	LTS	None Required	LTS
21-20. Potential Impact to Landfill Capacity	LTS	None Required	LTS
21-21. Potential to Induce Growth	SU	None Available	SU

Note: (a) The level of significance of two mitigation approaches are identified.
LTS = less than significant
S = significant
SU = significant and unavoidable

Table ES-2. Summary of Alternatives - Comparison of Impacts to the Proposed Project

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Resource Area	Proposed Project	Alternative 1	Alternative 2	Alternative 6	Alternative 8
Aesthetics	0	- - -	- - -	++	+
Air Quality	0	- - -	- - -	+	++
Biological Resources	0	- - -	- - -	++	++
Cultural Resources	0	-	-	+	+
Geology and Soils	0	- - -	- - -	+	++
Hazards and Hazardous Materials	0	%%%	%%	-	-
Hydrology/Water Quality	0	- - -	- - -	+	++
Land Use/Planning	0	%	%	0	0
Noise	0	- - -	- - -	+	++
Population/Housing	0	- - -	- - -	+	+
Public Services	0	%	-	0	0
Recreation	0	- -	- -	0	0
Transportation/ Traffic	0	- - -	- - -	+	0
Utilities/Service Systems	0	- -	- -	+	+
Growth Inducement	0	- - -	- - -	0	0

0 = Level of impact is equivalent to the proposed project.
- = Level of impact is slightly less than the proposed project.
- - = Level of impact is moderately less than the proposed project.
- - - = Level of impact is substantially less than the proposed project.
+ = Level of impact is slightly more than the proposed project.
++ = Level of impact is moderately more than the proposed project.
+++ = Level of impact is substantially more than the proposed project.